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Snowboard Binding

The invention pertains to a snowboard binding according to the generic part of Claim 1.

Snowboard bindings of this kind, which are intended for use with softboots, are already known (cf. EP 0 998 963 B1, for example). In these, there is a rigid connection between the heel strap and the sidewalls of the base plate. The heel strap can form a single unit with the base plate, or it can also be designed as a separate component, in order to adjust the binding to the shoe size.

The highback shell can be adjusted at the heel strap around an axis that runs transverse to the base plate, thus permitting adjustment of the forward lean angle, which can be anything between 8° and 30°, depending on the preferred snowboard riding style. For example, to fix the desired forward lean angle, a gearing arrangement can be provided that is supported in the middle between the two points on the left and right where the highback shell is attached to the heel strap.

In the known binding, there is a space between the highback shell and the heel strap to allow the highback shell to be pivoted to set the forward lean angle. In other words, the highback shell is at a relatively large distance from the heel strap in the middle, particularly if a large forward lean angle has been set. The heel strap then forms the part of the binding that extends backwards. For this reason, in a backside turn, snowboarders cannot "edge" with their heels as

much as they would like. Coupling the highback shell to the heel strap additionally ensures that the height of the binding can be reduced during transport, or when riding a chairlift.

The aim of the invention is to provide a softboot snowboard binding with a variable forward lean angle that permits much greater "edging" with the heels when performing a backside turn.

According to the invention, this is achieved with the snowboard binding characterized in Claim 1. Favorable designs for the invention are specified in the subclaims.

According to the invention, the highback shell is attached to the heel strap in such a way that the highback shell also lies on the heel strap in the middle, at least in the riding position, in other words when the softboot is in the binding. Thus, the heel strap does not extend any further back than the highback shell, so that it is possible for the board to be "edged" with the heels much more than has hitherto been possible when performing a backside turn.

According to the invention, in order to adjust the forward lean angle, a pivoting joint is provided between the heel strap, with the highback shell attached to it, and the base plate around an axis that runs transverse to the base plate, preferably at the upwards-extending sidewalls on the base plate. According to the invention, therefore, both the highback shell and heel strap together, and not just the highback shell, are angled to adjust the forward lean angle.

To reduce the height of the binding for transport, and for riding a chairlift, there is a pivoting joint between the highback shell and the heel strap around an axis that runs

transverse to the base plate, so that the highback shell can be tilted forward from the riding position when the rider steps out of the binding. When stepping in, it tilts back again, so that it also lies on the heel strap in the middle, in other words between the two points where the highback shell is connected to the heel strap. To support the highback shell on the heel strap when it is tilted back in the riding position, the highback shell features a projecting part in its central area that can extend slightly over the heel strap.

In order to fix the pivot angle between the heel strap and the base plate, and thus set the forward lean angle, the snowboard binding according to the invention also features a suitable fixing device. The design for this may vary. However, it should preferably engage with the heel strap at a distance from the pivot axis of the heel strap, and at as great a distance as possible so as to form a long lever arm between the pivot axis and the fixing device.

The fixing device ideally engages with the front ends of the heel strap in front of the pivot axis. To set the pivot angle, the front ends of the heel strap can be pressed against the sidewalls of the base plate. A screw can be provided for this on each side that extends through the heel strap and locks into a tapped hole, for instance, on the base plate. Several tapped holes can be provided in the base plate, allowing step-wise adjustment of the pivot angle of the heel strap.

Preferably, however, the pivot angle should be continuously adjustable. To ensure this, the screw can extend through one or the other sidewall of the base plate as well as the heel strap, and be fed into a longitudinal slit in the heel strap and/or in the sidewall; this slit can be a circular arc

design, with a curve whose radius corresponds to the distance between the screw and the pivot axis, whereby the longitudinal slit may also be straight, provided its width corresponds to this curve.

To ensure a firm connection between the base plate and the heel strap, a frictional connection or form closure can be provided when the screw is tightened. The form closure, for example, can be achieved through a toothing arrangement with the base plate and/or the heel strap on the clamping surface.

A gearing system, such as a screw gearing arrangement, toothed gearing arrangement, or similar, can also be used to pivot the heel strap, in other words to adjust the pivot angle of the heel strap to the base plate, and at the same time to fix the heel strap in place.

The screw gearing arrangement, for example, may comprise a shaft with both ends mounted on the base plate, extending through a nut and engaging with the heel strap. In other words, the nut moves up and down when the shaft turns, thus pivoting the heel strap when it engages with it.

Short, sharp impacts while snowboarding can result in the edges losing their grip and the rider thus losing control. The snowboard binding according to the invention, therefore, is preferably equipped with a damping pad between the heel strap and the base plate that, as experience has shown, is able to absorb short, sharp impacts of this kind. The damping effect can be achieved with a rubber elastic material.

The invention is explained below in more detail, based on the enclosed drawing. The drawing consists of:

Figure 1 A perspective view of a snowboard binding, omitting the fastening straps for the snowboard shoe; and

Figure 2 A partial side view of a sidewall on the base plate with a design variant for the adjustment and fixing device for the heel strap, with certain parts on the base plate "broken away."

According to Figure 1, the softboot snowboard binding has a base plate 1 with the sidewalls 2, 3 projecting upwards. The base plate 1 has a disc 4 on the base, with which, for example, the binding can be fastened with screws to the snowboard (not shown).

A pivoting heel cup or heel strap 5 is attached to the rear end sections of the sidewalls 2, 3 around an axis 6 that runs transverse to the base plate 1.

The highback shell 7 is attached to the heel strap 5. In the riding position shown in Figure 1, it is positioned with its lower edge area on the inner side of the heel strap 5, also in the middle, in other words between points 8 and 9, to which the heel strap 5 is attached to the base plate 1. Thus, the heel strap 5 does not extend any further back than the highback shell 7, allowing the snowboard to be turned more sharply than before when performing a backside turn. The forward lean angle for the highback shell 7 is adjusted by pivoting the heel strap 5 around the axis 6.

To reduce the height of the binding for transport, and for riding in a chairlift, there is a pivoting joint between the highback shell 7 and the heel strap 5 around an axis 11 that runs transverse to the base plate 1. As illustrated in Figure 1, this allows the highback shell 7 to be tilted forward from

the riding position after stepping out of the binding with the softboot. To allow the highback shell 7 to be supported on the heel strap 5 in the riding position, it has a projecting part 10 extending backwards in the middle, in other words between the attachment points 8, 9, and overlapping the heel strap 5.

To fix the pivot angle of the heel strap 5 in relation to the base plate 1, and thus set the forward lean angle of the highback shell 7, a screw 12, 13 can be provided on each side, as shown in Figure 1, that extends through the heel strap 5 at the front end, is then fed through a slit opening 14, 15 in the sidewall 2 and 3, and engages with a nut 16 on the inner side of the sidewall 2, 3. A rubber elastic material can be provided as damping material in the area of the slit 14, 15 between the heel strap 5 and the respective sidewall 2, 3.

For the device to adjust and fix the pivot angle of the heel strap 5, according to Figure 2, the sidewall 2 has two projecting parts 17, 18 at the top and bottom on the outer side, shown in section in Figure 2, on which a threaded shaft 19 is positioned with its upper and lower ends. The threaded shaft 19 has a head section 21, or similar, at the upper end to allow it to be twisted. Its lower end engages with a nut 25. For bearing purposes, the threaded shaft 19 extends through an aperture 22 in the upper projecting part 17 and an aperture 23 in the lower projecting part 18. A nut 23 is screwed onto the threaded shaft 19 that is designed as a bolt that engages through an aperture 24 with the heel strap 5. The aperture 23 on the lower projecting part 18 is in the form of a longitudinal slit to allow for the pivoting of the threaded shaft 19 when the pivot angle is set.

For damping purposes, discs 26 and 27, made from rubber elastic material, are provided between the head 21 and the upper projecting part 17, and between the nut 25 at the lower end of the shaft 19 and the lower catch or projection 18.